



**LinkedIn**

**Career Explorer**

Data & Architecture

<http://career.linkedin.com>

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Stanford Chapter of ACM  
November 12, 2010



## Concept

- Features
- Architecture
- Data
- Challenges

### Jeffrey Schang

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## Concept

- Students/career changers want to know what they can do
- They want to make informed decisions



## Concept

- Needs of student
- What if?
  - You knew what type of job people like you get
  - And where they go afterwards

LinkedIn has the data!



## Features

- Path Chooser
- Statistical Trends
  
- Job Listings
- Group Discussions
- Who can help you get where you want to be?



## Features

- Path Chooser
  - Major
  - Degree
  - Industry

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- University
- Location
- Years of experience



# Demo

LinkedIn Go to LinkedIn Recruiter » Jeffrey Schang Add Connections

Home Profile Contacts Groups Jobs Inbox 38 Companies More People

### Career Explorer beta

Career Path-1  Career Path-2  Career Path-3

**Your career path starting point**

What is your major?

Expected degree?

Expected Industry?

*Make sure this info is correct + click 'Start my path'*

*You are here!*



# Demo

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### Career Explorer *beta*

Career Path-1 \* Career F

	Time in job	Education	Salary
<b>Software Engineer</b>	3 yrs 5 mos	Bachelor's	\$54-82k
<b>Intern</b>	9 mos	Bachelor's	\$22-32k
<b>Software Development Engineer</b>	3 yrs 4 mos	Bachelor's	\$55-83k
<b>Software Developer</b>	3 yrs 1 mo	Bachelor's	\$54-82k

Hey, now we're moving!

Choose a next step. These titles are popular for people with your background.






# Demo

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### Career Explorer *beta*

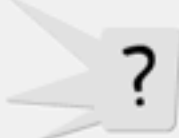
Career Path-1 Career Path-2 \* Career Path-3



	Student » Computer Science,	Software Development Engineer 83k »
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Now choose your next step. These are common titles for this stage in your career.

Job Title	Time in job	Education	Salary
Software Engineer	3 yrs 5 mos	Bachelor's	\$54-82k
Senior Software Engineer	3 yrs 10 mos	Bachelor's	\$79-109k
Project Manager	4 yrs	Bachelor's	\$55-87k
Web Developer	2 yrs 3 mos	Bachelor's	\$41-63k

[I'm done setting up this path](#)  
[Launch the dashboard now »](#)





# Demo

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### Career Explorer *beta*

Career Path-1 Career Path-2 \* Career Path-3 [Make another path](#)

	<b>Student »</b> Computer Science,	<b>Software Development Engineer 83k »</b>	<b>Senior Software Engineer 109k »</b>
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Choose one more step - we're almost done!

Job Title	Time in job	Education	Salary
<b>Software Engineer</b>	3 yrs 5 mos	Bachelor's	\$54-82k
<b>Project Manager</b>	4 yrs	Bachelor's	\$55-87k
<b>Software Developer</b>	3 yrs 1 mo	Bachelor's	\$54-82k
<b>Principal Software Engineer</b>	5 yrs 3 mos	Bachelor's	

**I'm done setting up this path**  
[Launch the dashboard now »](#)





# Demo





Software Development Engineer 83k »    Edit    Senior Software Engineer 109k »

**Software Development Engineer**

Education:	Salary:	Time in job:
Bachelor's Degree	\$55-83k	3 yrs 4 mos

People    Companies

People with this title  
Connect with them to build your network.

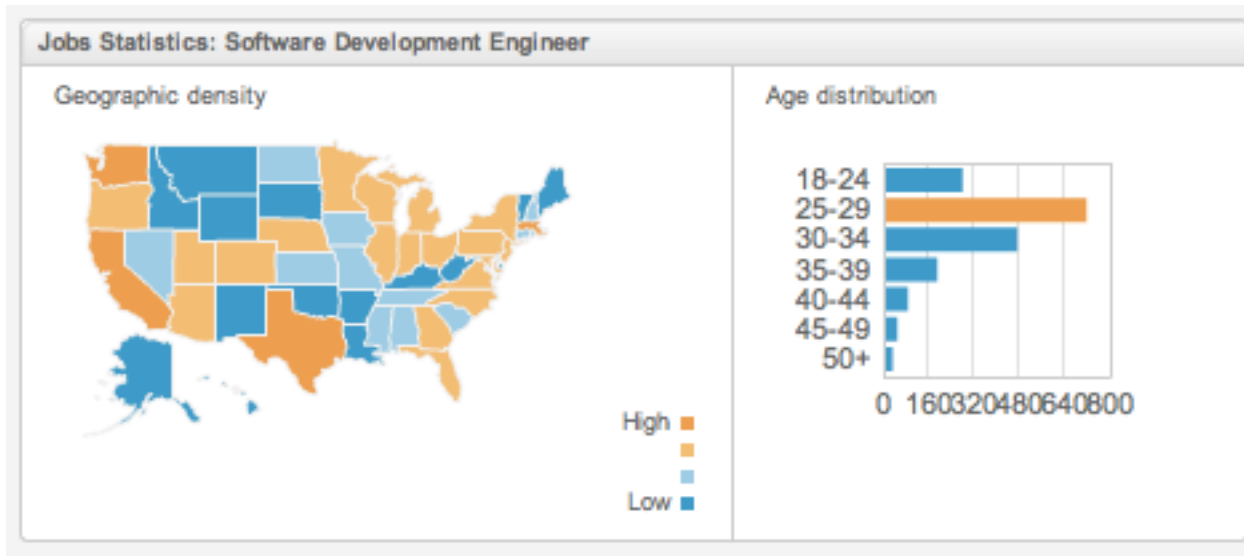
-  **Dan Sully**  
Principal Software Engineer at LinkedIn  
[Connect](#)
-  **Abdur Rehman Pathan**  
Software Development Engineer at NextLabs, Inc.  
[Connect](#)
-  **Joe Longson**  
Senior Animation/UI Software Engineer  
[Connect](#)
-  **Rupsha Chaudhuri**  
Technical Yahoo, Systems Software Development Engineer  
[Connect](#)

[See more »](#)

VP, Global Retail    Kindle, WW Business



# Demo

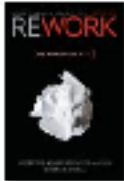


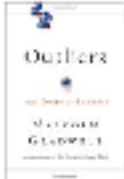



# Demo

Software Development Engineer Reading List

ReadingList by amazon

 **Rework**  
[See this book on Amazon »](#)


 **Outliers: The Story of Success**  
[See this book on Amazon »](#)

 **Good to Great: Why Some Companies Make the Leap... and Others Don't**  
[See this book on Amazon »](#)



# Demo




### Intern Jobs




#### Intern

Broadcom - Hsinchu City - Nov 11, 2010

▶ Find people in your network at Broadcom

 <p><b>Sanjay Kumar</b> Product Marketing Professional <a href="#">2nd</a></p>	 <p><b>Trent Bartow</b> Cellular Product Line Manager at Broadcom Corp. <a href="#">2nd</a></p>	 <p><b>Russ Oeser</b> Contract Recruiter at Broadcom via Morgan Staffing <a href="#">2nd</a></p>
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[View all 32 people](#)




#### Intern in Brand, Strategy & Planning Team Europe

eBay - Zurich - Nov 10, 2010

▶ Find people in your network at eBay

 <p><b>Alan Cole</b> Sr. Compensation Analyst at eBay <a href="#">1st</a></p>	 <p><b>Stephanie Tilenius</b> Vice President of Commerce, Google <a href="#">2nd</a></p>	 <p><b>James Barrese</b> VP, Technology at eBay <a href="#">2nd</a></p>
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[View all 366 people](#)



#### Intern for IT PMO Department

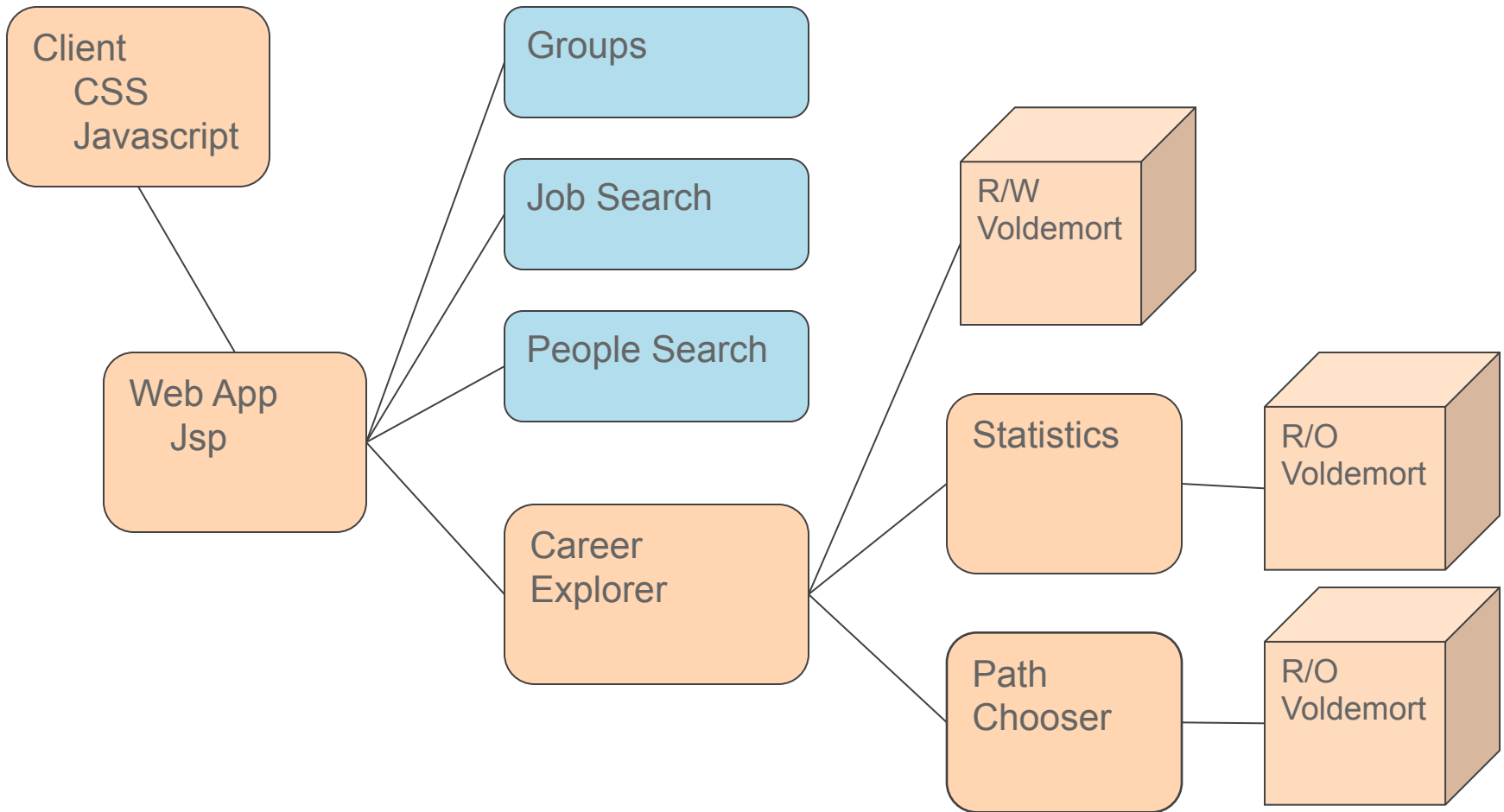
Level One Communications - Broomfield, CO 80021 - Nov 9, 2010

▶ Find people in your network at Level One Communications

You have no connections to Level One Communications. [Add connections to expand your network.](#)



# Architecture





## Data

- No two people are alike
  - Different majors
  - Different industries
  - Different experiences

How to forecast?



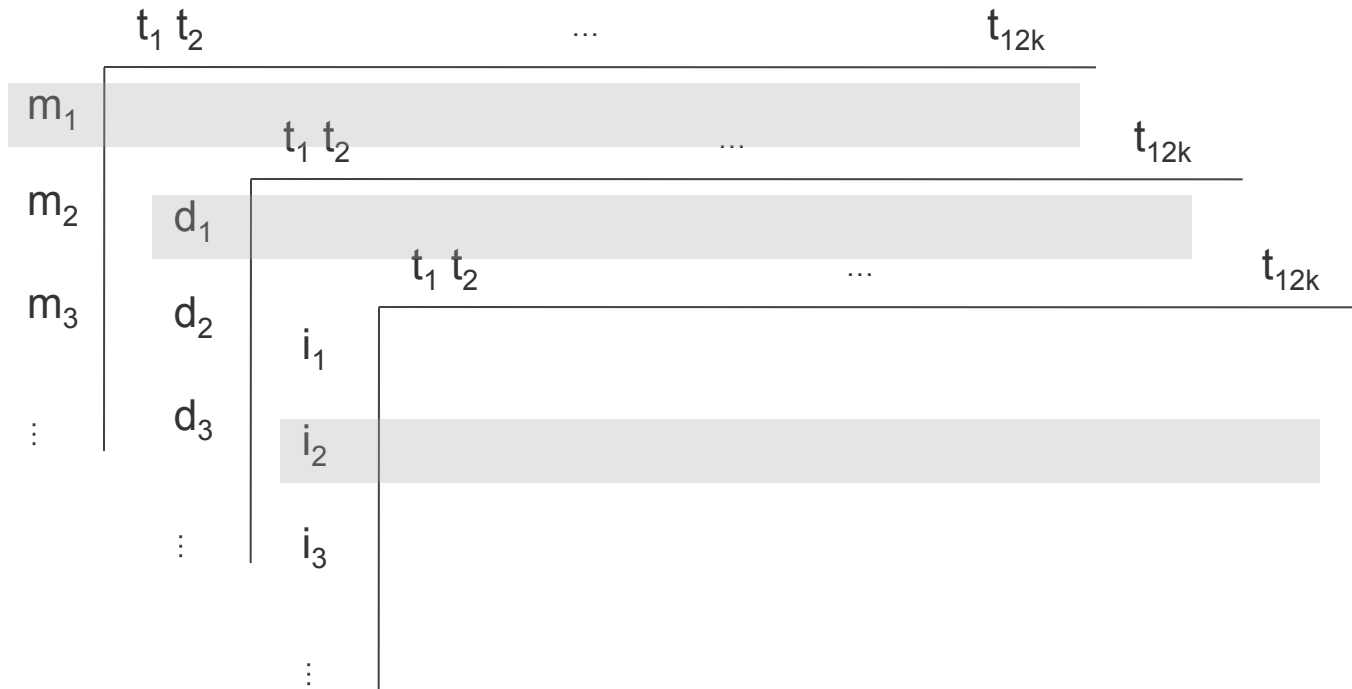


## Data

- We choose a naïve Bayesian statistical model – combine probabilities of up to 7 parameters:
  - 1) For a given parameter, calculate the probability of the next job (about 12,000 standardized job titles)
  - 2) For each job title, multiply the probabilities of all the parameters and normalize



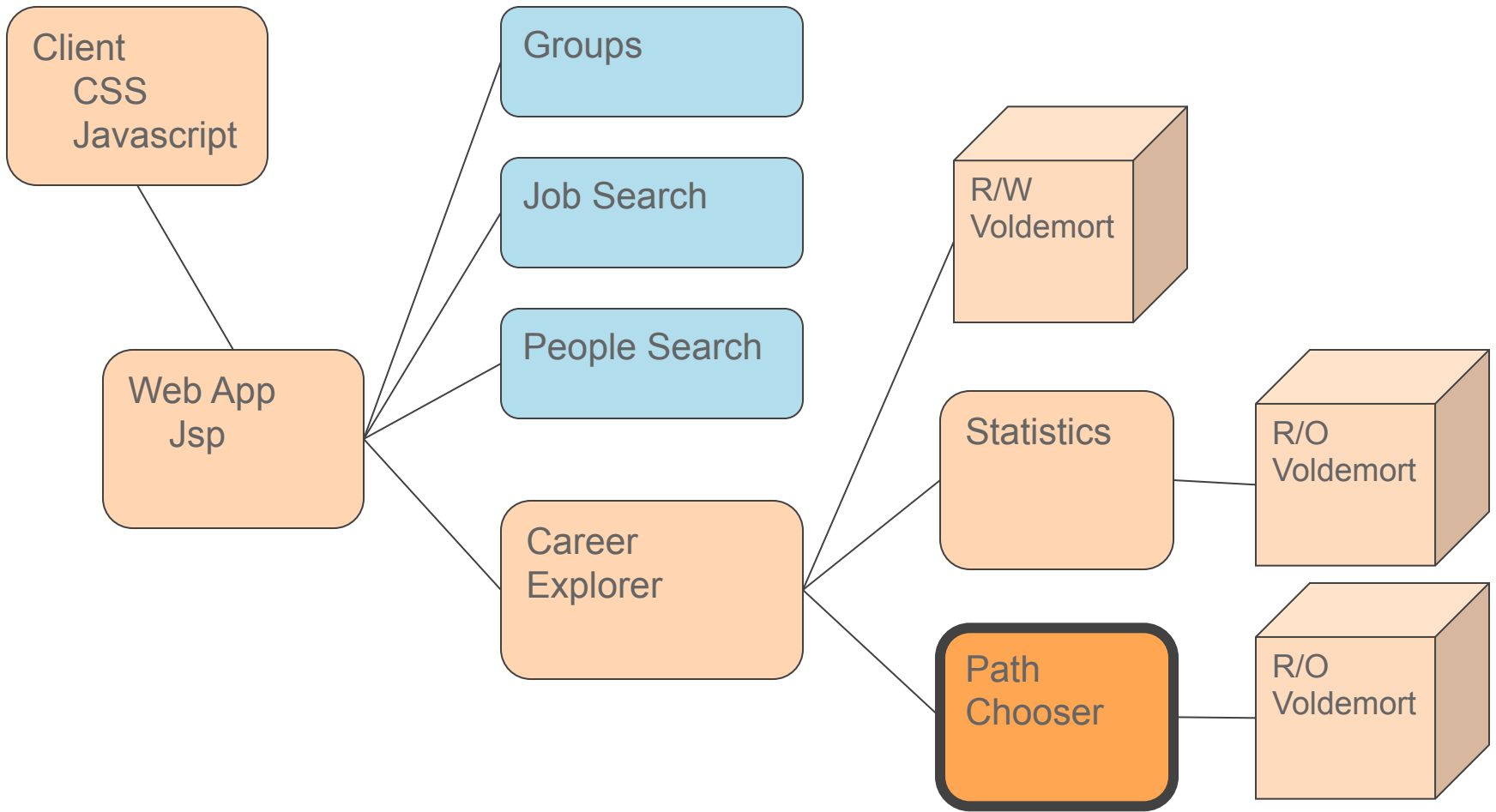
# Data



Processing: multiply up to 7 rows of 12k items, < 20 ms



# Architecture





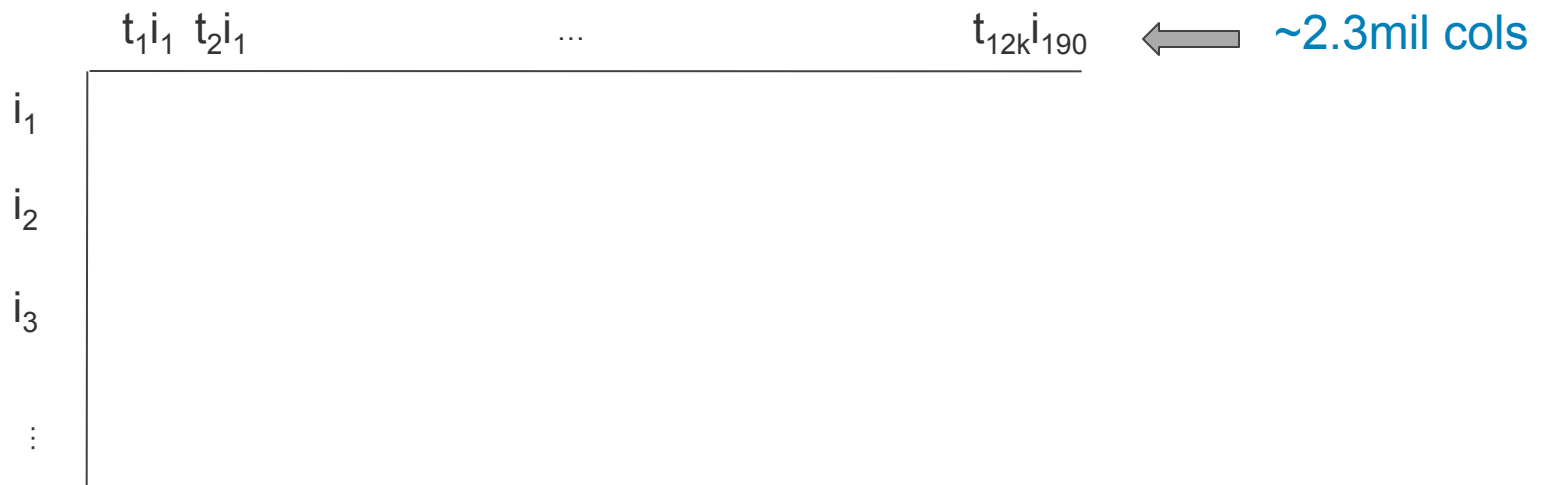
## Challenges

- Are the forecasts realistic?
  - Often top titles are generic title (e.g. Intern, Account Manager)
  - Then next title is also generic (e.g. Owner, V.P.)
  - Overweighting of technology professionals
  - Generic title is specific to industry



## Solution

- How to make forecasts realistic?
  - Title is actually a compound key with industry





## Solution

- 2.3 million columns per parameter:
  - Now too much computation per request
  - I/O per request
  - Also size of data tables getting expensive



## Solution

- Only use the compound key for generic titles that span many industries
  - Reduces columns to approximately 240k
  - Processing per request: 15 ms I/O, 35 ms calculation



## Summary

- Groundbreaking tool for career planning – unlike anything else out there
- Made possible through the combined data of LinkedIn's 80,000,000 members





Q & A

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